Tech and Ties in a Collective Way: Examining the Intersection of Technology Use and Social Relations on Self-organization in Community Group Buying during Shanghai's Pandemic Lockdown

Student-authored

Abstract

The COVID-19 pandemic resulted in a strict city lockdown in Shanghai from March to June 2022, during which community group buying emerged as the primary means for citizens to acquire daily necessities and groceries for survival. This study examined the self-organizing patterns and information technology use in community group buying activities through a four-month ethnography and interviews with 13 participants during the lockdown. The results revealed the emergence of the roles of coordinators and volunteers in community group buying, and the use of WeChat groups as an integrator of information, resources, payment, and calculation. Contrary to the individual logic in the e-commerce platforms before the lockdown, the residents demonstrated a collective approach to obtain necessities during the lockdown. Additionally, the study found that the social relations of community group buying coordinators endowed them with more power in the organization, and new social relations emerged in the use of ICTs, like community rebuilding. Drawing on adaptive structuration theory and a rural China perspective, the author argued that the use of ICTs and self-organization during disasters could bring people together in a collective way, instead of driving people apart like what individualistic e-commerce platforms do. This de-atomizing process should be understood at the intersection of technology use and social structures, and traditional social relations should not be dichotomized with technology use in modern society.

Keywords: Shanghai Pandemic Lockdown, Civil Self-organization, Traditional Social Relations, Community Group Buying, Collective Action

1. Introduction

The proliferation of food delivery has been significant with the rise of the platform economy, which has allowed digital platforms to facilitate and enable economic activities (Kenney & Zysman, 2016; Lei, 2021). Tech giants, which have had a significant impact on nearly every part of Chinese people's lives (Zhang & Chen, 2022), have entered the O2O (online to offline) food delivery market through self-built platforms or by integrating other companies' applications (Florian & Lüthje, 2017; Sun, 2019). By 2019, the number of users who ordered food with platforms reached 421.18 million, and these platforms have expanded their delivery services to include delivering all kinds of groceries and even some necessities (CNNIC, 2019). On ele.me or Meituan, the two largest food delivery platforms in China, people can easily manage their daily lives by connecting to the platforms individually, creating a specific social order to maintain their lives. In Shanghai, a metropolis in China, 26 million residents heavily rely on platforms to maintain their daily life by taking advantage of the delivery service before March 2022.

In March 2022, things changed when the Shanghai government announced a lockdown policy due to the COVID-19 outbreak. Under the zero-COVID policy, the government believed that couriers and food deliveries were carrying the virus, so they restricted most food deliveries on E-Commerce platforms (Lu & Khan, 2022), only allowing a small number of companies and grocery suppliers with permission to deliver food and groceries, which led to a shortage of capacity (Huang, 2022). This shortage made it difficult for the 26 million residents in Shanghai to place orders for groceries on platforms like Meituan or ele.me, as the platforms were only able to satisfy a small proportion of needs (Catterall, 2022). As a result, citizens in Shanghai were supposed to obtain groceries and necessities from their neighborhood committees led by the

government, but the amount provided could not meet the needs of residents, leading to a food shortage for most citizens in Shanghai (Allen-Ebrahmian, 2022). To alleviate the problem, a form of group buying emerged in many communities, where people organized themselves to purchase bulk quantities of groceries from informal sources (due to the high cost of transportation during the lockdown, delivering groceries as a whole was more cost-efficient than delivering to each household), which would then be delivered to the community (Catterall, 2022; Horwitz, 2022; Lu & Khan, 2022).

Information communication technologies (ICTs) such as WeChat played a crucial role in the organization of group buying during the Shanghai lockdown (Horwitz, 2022; Lu & Khan, 2022). The use of ICTs in self-organizing activities during disasters has been extensively studied (e.g., Houston et al., 2015; Kaufhold & Reuter, 2016; Silver & Matthews, 2017; Stephens et al., 2021). However, what makes the case in Shanghai unique is that the city heavily relies on individual channels on delivery platforms for food and groceries. This reliance is particularly noteworthy because these technologies, according to Turkle (2011), were thought to drive people apart. Thus, it is crucial to investigate how citizens used ICTs as a basic infrastructure to coordinate collective actions like self-organization during the lockdown when these platforms were not functioning properly. Additionally, it is essential to examine how structural positions and social relations influenced people's use of technology and behavior during this period (Castells et al., 2009; Chan, 2018; Lovett et al., 1999; Wang, 2018). Therefore, it is important to delve deeper into the intersection of technology and social structures to understand the behavioral patterns of citizens during the Shanghai lockdown.

The author happened to live in Shanghai during the lockdown, and conducted a four-month ethnography study and 13 depth-interviews with citizens from March to June, 2022 (Goh &

Woo, 2022). The author argues that the temporary malfunction of individualistic platforms resulted in a collective way of using ICTs, bringing people together rather than driving them apart, with the group coordinator playing a central role in self-organization. The study revealed that social relations, including Chinese traditional social relations, played a significant role in shaping individuals' self-organizing patterns and access to materials for survival, even in highly atomized urban environments.

2. Literature Review

2.1 The Pandemic and Shanghai's Lockdown

This section provides background information on the zero-COVID policy and the lockdown implemented in Shanghai from March to June 2022. As China's zero-COVID policy and regular city lockdowns were uncommon approaches and were believed unsuitable to combat the highly transmissible Omicron variant by many in the healthcare industry (Ip, 2022), it is necessary to provide background information on them.

Since the outbreak of the pandemic in December 2019, many countries have employed various strategies to cope with COVID-19. Among these strategies, China implemented the strictest one, known as the "zero-COVID" policy, which requires zero tolerance for any COVID-19 cases (Huang, 2022). Under this policy, many cities in China implemented lockdowns to restrict the transmission of the virus. Wuhan was the first city to implement an entire city lockdown, which began on January 22, 2020, and lasted for seventy-six days (Yang, 2022). The Wuhan lockdown had a positive impact, as it helped restrain the transmission of COVID-19, saved many lives, and reduced economic costs (Lau et al., 2020). However, the success of the Wuhan lockdown hadn't continued in Shanghai.

Starting in August 2021, the Chinese government continued the zero-COVID policy, now known as the "dynamic zero-COVID" policy, to combat the highly transmissible Omicron variant. This policy involved imposing restrictive measures until there were no COVID-19 cases in a specific geographic area (Bai et al., 2022). These restrictions included suspending citywide traffic, except individual vehicles with permits; restricting carriers, as courier services were believed to carry the virus, and limiting deliveries to licensed companies and individuals; prohibiting outdoor activities if any confirmed cases were detected; and distributing supplies on a neighborhood basis. However, the effectiveness of the dynamic zero-COVID policy in controlling the transmission of the highly contagious Omicron variant has been questioned. Additionally, strict lockdowns could have adverse effects on essential health services for people with chronic illnesses (Bai et al., 2022).

Until September 2022, seventy-four cities in China had experienced or were experiencing entire city lockdowns, including some metropolises like Shanghai, affecting 313 million people (Gan et al., 2022). China continued to implement the dynamic zero-COVID policy until December 2022, when the government ceased the policy (Ergenc, 2023).

2.2 ICTs Use and Self-organization during Disasters

The use of information and communication technologies (ICTs) is widespread during disasters, with both officials and citizens relying on them for various purposes. Traditionally, officials have used ICTs to organize evacuations, distribute supplies, and conduct post-disaster assessments (e.g., Li, Bensi, et al., 2021; Li, Ma, et al., 2021). However, officials' organization and assistance may not always meet the needs of citizens during disasters, leading them to seek alternative sources of resources and to self-organize themselves using ICTs (Murthy & Longwell, 2013). Citizens can play a substitute role for the government during disasters (Simsa

et al., 2019). The use of ICTs is both enabled and confined by technology affordance, which also applies to self-organization behaviors during disasters (Stephens et al., 2021).

The situation in Shanghai during the lockdown exemplified this. Before the lockdown, the individualistic channel on e-commerce platforms played a central role in Shanghai citizens' groceries purchase. However, the common source of e-commerce failed due to strict courier shutdown policies during the lockdown. Neighborhood committees, which were supposed to provide supplies through the government, were unable to meet the needs of citizens for supplies (Allen-Ebrahmian, 2022; Lu & Khan, 2022). As a result, many citizens turned to alternative methods of self-organization and resource-seeking, using ICTs such as WeChat (Horwitz, 2022).

Numerous authors have acknowledged the potential for civic self-organization as an additional capacity and substitute for authority during disasters (e.g., Murthy & Longwell, 2013; Simsa et al., 2019; Whittaker et al., 2015). With the use of ICTs, citizens can mobilize themselves to share information (Houston et al., 2015), seek resources (Li et al., 2019), work as digital volunteers (Kaufhold & Reuter, 2016), and connect online and offline (Albris, 2018; Stephens et al., 2021). Civic self-organization can also facilitate community participation and connection (Houston et al., 2015; Li et al., 2019; Silver & Matthews, 2017).

The widespread use of ICTs has enabled citizens to self-organize and respond effectively during emergencies (Stephens et al., 2021; Whittaker et al., 2015). Past experiences have shown that technology affordances are crucial in working as a base enabling people to communicate and coordinate during disasters (Stephens et al., 2021). Affordances refer to people's perception of the material features of a technology, which can influence their exploration and utilization of it (Gibson, 1979). In the situation of self-organization during disasters, the broad use of ICTs and

the public visibility afforded by social media can offer more opportunities for citizens to be rescued (Stephens et al., 2021).

Given the importance of technology affordances in self-organization during disasters, it is worth examining the behavioral patterns and technology use of citizens in the group buying during the Shanghai lockdown, and comparing it with the behavioral pattern of citizens obtaining life necessities before the lockdown. Therefore, the first two research questions are:

RQ1: Compared with the platform-delivery pattern before the lockdown, how did the citizens self-organize themselves for group buying during the Shanghai lockdown?

RQ2: How did the citizens use ICTs in their self-organization of group buying during the Shanghai lockdown?

2.3 Social Relations in the Use of ICTs

Communication technologies are not developed and utilized in isolation, but rather within the context of social relationships and structural positions. Scholars have noted that even minor changes in technology can have significant relational effects, and social relationships are considered a key factor in shaping the use of ICTs (Chung & Hossain, 2010; Fulk et al., 1990). That is to say, the use of ICTs is constrained by the social structures in which they operate, and faces challenges posed by the structural positions of technology users (Castells et al., 2009). In China, traditional social relations have influenced the way people use technologies (Chan, 2018; Wallis, 2011; Wang, 2018). Wallis (2015) concluded that the socio-techno practices in China were shaped by the various social, economic, and cultural relations together when the technology was integrated into existing social practices.

Numerous studies have shown that various social relations have influenced Chinese people's use of ICTs, from gender roles to rural-urban relations (Chan, 2018; Wallis, 2011; Wang, 2018).

Community is an essential social practice where numerous social relationships exist (Gans, 1961; Talen, 1999). Some scholars have argued that community-oriented technology use can challenge the logic of the mainstream technologies that are based on metropolitan life (Chan, 2013; Qiu, 2009). In Shanghai, a metropolis that experienced significant social atomization (Simmel, 1950[1917]), community-oriented usage of technology was rare before the pandemic, because well-developed e-commerce platforms as mainstream information technologies allowed Shanghai residents to purchase daily necessities through individualistic channels (Florian & Lüthje, 2017; Sun, 2019). The atomizing effect of e-commerce platforms aligns with Turkle's (2011) argument that technology is driving people apart rather than bringing them together because people expected more from technical avatar's relations rather than real social connections. However, during the lockdown, the citizens of Shanghai have now organized themselves into community groups to purchase groceries in bulk (Catterall, 2022; Horwitz, 2022; Lu & Khan, 2022), leading to the emergence of community-oriented technology use. In the self-organizing process, IT platforms like WeChat played an important role, but in a de-atomizing way, which facilitates social connections among the residents in a community, making it worth looking into the social relations behind the self-organization.

Previous studies have studied that social relations and community forms influenced people's use of ICTs in self-organization during disasters (e.g., Li et al., 2019). For instance, cultural relationships among Chinese made volunteers and rescuers more willing to use WeChat even in the U.S. society dominated by other social media like Facebook and Instagram (Li et al., 2019). However, the specific connection between social relations and technology use in self-organization during disasters remains unclear. Therefore, the third research question aims to

investigate how social relations influence the use of ICTs in self-organization among neighborhoods during the Shanghai lockdown:

RQ3: How do social relations influence the ICTs use in the self-organization among neighborhoods during the Shanghai lockdown?

3. Method

The data for this article was obtained from two sources: a four-month ethnographical study conducted as an insider during the Shanghai lockdown between March 2022 and June 2022 in Shanghai, and 13 in-depth interviews with Shanghai citizens.

Specifically, the author was living in Shanghai when Omicron broke out in Shanghai at the beginning of March 2022. As both a researcher and resident, the author had the opportunity to closely observe and document the social setting (Warren & Karner, 2005).

To gain a deeper understanding of the social setting, the author conducted 13 in-depth interviews with participants. In-depth interviews are effective in identifying "what is occurring in a setting and to reveal individual meanings" (Croucher & Cronn-Mills, 2015, p. 161). In the context of the Shanghai lockdown, understanding the experiences of others regarding group buying was essential. To ensure the efficiency of the interviews, certain prerequisites were set for recruiting participants. All participants had to have experienced the Shanghai lockdown between March and June 2022 (Goh & Woo, 2022) and been confined to their homes for at least three weeks during the lockdown. Additionally, to align with the focus of the study on obtaining necessities such as groceries during the lockdown, participants had to be the main purchaser of supplies for their households. Convenient sampling and snowball sampling methods were used to recruit participants. When 13 interviewees were reached, no new concepts emerged, and the study reached the level of thematic saturation (Patton, 1990). Each interview was treated as a

case, rather than just a sample, as cases can provide a comprehensive explanation of a phenomenon in ethnography (Small, 2009). That is to say, the participants' age, gender, occupation, family status, and length of residence in Shanghai were all important and worth recording information, as they could help to understand their thoughts and experiences. The author observed that most interviewees were willing to participate and share their experiences during the lockdown, which could be attributed to the lockdown's impact on individuals' mental health and the need for therapy through talking about it (Glowacz & Schmits, 2020).

Before conducting each interview, the author provided a consent form to inform participants of the purpose of the interviews and that the entire interview would be recorded. The interviews were conducted from April to June 2022, with the shortest lasting 35 minutes and the longest lasting 150 minutes. Due to the lockdown, all interviews were conducted over the phone. To consider demographic information, the author identified participants by their gender, age, occupation, family status, and length of living in Shanghai (as shown in Appendix 1). The participants' ages ranged from 24 to 49, with an average age of 31.85. They represented a variety of occupations including housewives, freelancers, teachers, administrators, students, stock traders, consultants, and others. It is worth noting that 69.2% of the participants were female, which may be attributed to the prerequisite that all participants be the main purchasers of supplies for their households. This aligns with data from UN Woman (2020), which shows that on average, women spend three times more time than men on domestic work and care during COVID-19. All interviewees preferred to use pseudonyms during the interview, thus their names have been replaced with pseudonyms. All interviews were audio-recorded and transcribed verbatim.

During the interviews, the author employed an informal conversational approach to engage with the interviewees. The interviews commenced with attentive listening to the interviewees' experiences during the recent lockdown period. The author then proceeded to probe into their technology use, their experiences of participating in group buying, and their personal feelings and emotions regarding the group buying experiences. This approach allowed the author to get rich and detailed information.

Before analyzing the interview data, the author reviewed the memos created during the fieldwork multiple times. During the analysis of interview transcripts, the author employed a five-step process of analysis (Peterson et al., 1994): first, identifying themes to answer the research questions; second, finding specific quotes relevant to these themes; third, determining the role of each theme in the interview; fourth, identifying connections among the themes; and finally, combining themes from all interview data. Four themes were identified and are reported in detail below. To present the original materials, all quotes in Chinese have been translated into English and included in the following section.

4. Results

4.1 The Role of Group Coordinator and Volunteers: the Behavioral Pattern of Self-organization during the Lockdown

4.1.1 The Role of Community Group Buying Coordinator

During the lockdown, group buying of groceries became a necessity due to the bulk quantities required for delivery. As such, a coordinator was needed to organize purchase behavior in the community. According to Bingqing, a 24-year-old resident, the group buying process was chaotic before a coordinator was appointed:

> “Everyone was just scrambling to get food however they could, but the merchants had a minimum order requirement to save on delivery costs due to the restrictions. So for three long days, we couldn't meet that minimum and there was no food in our neighborhood. It was a real struggle.”

Bingqing then volunteered to be the community group buying coordinator after learning about the role online. She observed that most individuals were hesitant to take on this leadership role, not necessarily due to its demanding nature. According to Bingqing, ″it was just that people wanted to wait for someone else to take on the responsibility.″ However, when the author asked about Bingqing’s work as a group buying coordinator during the lockdown, there were not a few tasks she recounted about her work. As the coordinator, Bingqing was responsible for finding suppliers, comparing prices, tallying residents' preferences, collecting money, and interfacing with the suppliers.

> “So basically, in the morning after working from home for about two hours, I check out my moments (a semi-overt platform for posting microblogs) on WeChat to see which suppliers are available. I choose the best ones based on cost-effectiveness, and then I send their names to our community’s WeChat group. Then, everyone picks what they want and tells me about it. After that, I collect the money from everyone and contact the suppliers. I give the suppliers the money and wait for them to deliver the groceries to our neighborhood.”

However, being a community group buying coordinator was not without its difficulties. Bingqing admitted that dealing with money was stressful and that there was pressure to ensure that all residents received their groceries. Nevertheless, she was determined to carefully screen suppliers to avoid any issues. Another challenge was the fact that suppliers only delivered to the

entrance of the neighborhood, and not to individual households. This issue was only resolved with the help of self-organizing volunteers. Despite the challenges, Bingqing never regretted her decision to become the coordinator, and saw it as a way to help her community during a difficult time.

4.1.2 Volunteers in Delivery

Previous research has explored how citizens utilize ICTs to volunteer during disasters and connect online resources to offline activities (Albris, 2018; Kaufhold & Reuter, 2016; Stephens et al., 2021). During the Shanghai lockdown, volunteers were responsible for delivering food and groceries purchased by the community group buying coordinator from the entrance of the community to the doorstep of each household to prevent the spread of the virus, therefore connecting the online purchase to offline delivery. Some volunteers formed grassroots organizations spontaneously without any leadership. For example, Gaven, a 25-year-old native, delivered groceries in an old, run-down residential area:

> "The neighborhood I live in is kind of run-down, and the neighborhood committee has never really taken care of it, though they should. The management is very chaotic. I grew up here, so I decided to be a grassroots volunteer. The job is actually quite simple. I put on medical protective clothing and deliver the supplies that are delivered to the gate of the community to the doorsteps of each household at a fixed time every day."

In some well-managed communities, neighborhood committees also organized residents to become volunteers and volunteers received verbal praise from the committees. Yanjie, a 44-year-old resident, said that her husband became a volunteer to deliver food from the community entrance to every household after seeing a WeChat group notice from the neighborhood committee calling for volunteers due to their inability to deliver groceries to every household.

According to Yanjie, her husband “goes to the entrance every day at a fixed time and feels a sense of accomplishment.”

Figure 1 illustrates that the citizens' self-organization for grocery delivery during the lockdown was centered on the role of the group coordinator, enacted by community volunteers. This differs from the platform-delivery model of Chinese e-commerce (Florian & Lüthje, 2017; Sun, 2019) prior to the lockdown. By comparing the pattern of purchasing groceries before and during the lockdown, the platform-delivery model was heavily individualistic, which means that Shanghai residents could simply wait for deliveries without the need to form social connections with their neighbors. However, in the community group buying pattern that emerged during the lockdown, residents had to rely on their neighbors and form social connections within their communities to acquire life necessities. This pattern can be referred to as the collective logic, whereas the former can be termed as individualistic logic.

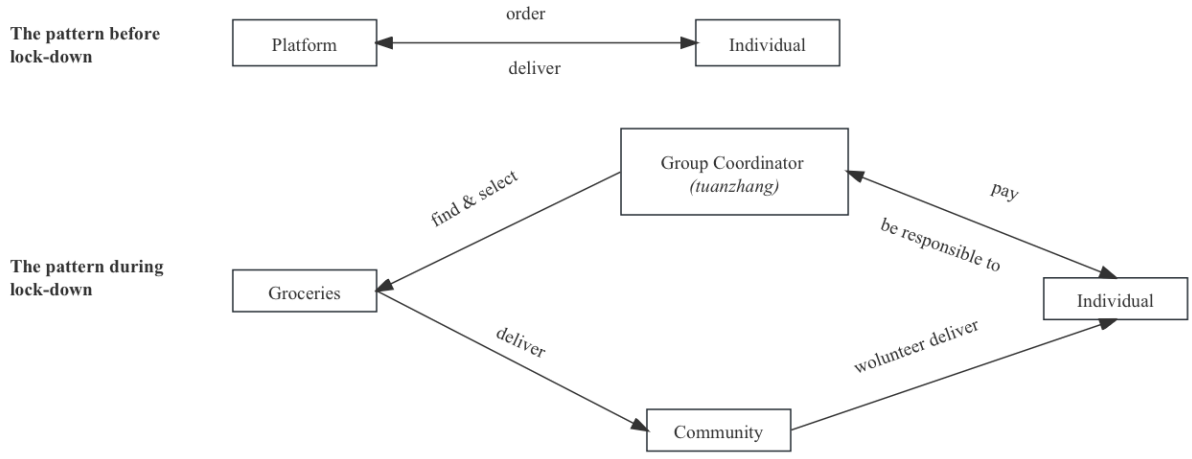

Figure 1. The comparison between the pattern of purchasing groceries before the lockdown and during the lockdown.

4.2 Coordination in WeChat Groups

WeChat has emerged as a multifaceted application on Chinese smartphones, with 1288.3 million monthly active users as of March 2022 (Tencent, 2022), making it the most important application in the country. Apart from serving as an instant messaging platform, WeChat has also integrated other features such as Moments, a semi-public posting microblog platform, WeChat-Public-Account, a news feed, and WeChat Pay, a payment tool (Montag et al., 2018). In 2017, WeChat introduced mini programs, which are lightweight, quickly loaded, and shared applications within the WeChat app (Russell, 2017). These mini-programs have been adopted by businesses to provide seamless user experiences for services such as e-commerce, food delivery, and transportation. During the Shanghai lockdown, WeChat groups served as the backbone to connect these functions when the coordinator organized group buying activities.

During the lockdown, WeChat groups were instrumental in facilitating community members' buying activities. According to Vinci, 45, he was added to the community's WeChat group at the start of the lockdown. As demand grew, specific WeChat groups emerged for purchasing different items, such as a bread group, a vegetable group, and a cleaning product group. “The group buying coordinator would send information about merchants and their products to the corresponding WeChat group to ensure that individuals could purchase according to their needs without confusing the purposes of different groups.”

Mini programs such as survey Sojump and collaborative spreadsheet programs like Tencent Excel were utilized by Yilin, a volunteer responsible for calculating and reporting residents' needs to the group buying coordinator. The lightweight and easily shareable nature of these mini-programs made it convenient for residents to log their needs through WeChat groups.

> *“*Usually, I would set up the information that residents need to fill out in a survey or form, such as their name, phone number, apartment number, the number and types of

items they need, prices, and so on. Then, I would export this data from the backend of the mini program and do some calculations to get some useful statistics.*"*

However, for middle-aged people, using WeChat mini-programs to register their grocery demands was not as easy, and they preferred using the built-in function of WeChat groups called "*qunjielong*" (group solitaire), which was previously used to play games for WeChat group numbers to answer questions in a specific order. Anna, a 49-year-old participant, expressed her discomfort with using the survey mini-program and instead requested the coordinator to use WeChat groups to log her needs. "The group buying coordinator chose to use group solitaire. We wrote our needs in the order of name, apartment number, types and quantities of groceries needed in the group chat, and paid directly to the coordinator with WeChat payment."

Throughout the group buying process, WeChat groups serve as a central hub, linking the computation of requirements, payment, and communication. Furthermore, WeChat groups incorporate diverse features of the WeChat application, including WeChat payment, instant messaging, and mini-programs, to streamline group buying activities. Notably, during this process, users have devised unanticipated means of leveraging these features to fulfill their needs, exceeding the original intent of the applications.

4.3 Guanxi

4.3.1 Guanxi in Coordinating the Self-organization

The concept of *guanxi* played a crucial role in coordinating self-organized group buying activities during the lockdown. Vinci recognized the importance of having *guanxi* with merchants and the neighborhood committee as a community group buying coordinator: “I don’t have *guanxi*. A coordinator needs to have *guanxi* with the merchants and the neighborhood committee.” Vinci’s words directed the author’s attention to the significance of *guanxi*. *Guanxi*

was defined as a particular, sentimental tie between individuals that has the potential to facilitate favor exchanges (Bian, 2006). It's also considered a form of social capital that brings social networks (Lin, 2001). As such, *guanxi* is associated with power because those with *guanxi* can own a larger social network and gatekeep information (Huang, 2000; Zhang & Zhang, 2013).

In the context of community group buying during the Shanghai lockdown, *guanxi* was mainly manifested in two ways: the connection with grocery suppliers and the connection with the neighborhood committee. A coordinator, or the group buying organizer, was a central role in self-organized groups. However, to become a coordinator, one needed to have *guanxi* with the merchants and the neighborhood committee.

Wu, a 35-year-old teacher became the first community group buying coordinator in his neighborhood because he knew some suppliers. "I'm a teacher, and I have a student in class whose father is running a vegetable store." Pang, 25, also knew some suppliers but didn't want to be the coordinator. Instead, he sent their information to others who knew the neighborhood committee in his community. The neighborhood committee had the responsibility to examine the suppliers, and they tended to give the role of group buying coordinator to someone they knew and trusted.

4.3.2 Guanxi and Power in the Group Buying

The personal qualities of the group buying coordinator were also related to the price of groceries. Li, a 30-year-old participant, gradually participated less frequently in group buying because he understood that some food suppliers offered group coordinators a kickback of 20-30%. By encouraging more people to participate in group buying, the coordinators could earn more money, resulting in higher food prices. Li expressed his dissatisfaction with this practice, saying, "I only participate in group buying when I have nothing to eat, because I believe that

some coordinators are using this method to make a profit. The prices of group buying in our community are getting higher and higher."

The power dynamics of *guanxi* are further illustrated by the experience of Junyi, a 24-year-old non-native in Shanghai. Junyi's request for a group buy of frozen dumplings was rejected by the group buying coordinator, who was a native Shanghainese: “She said dumplings were only for people in the north, and I feel annoyed.” The coordinators’ decision-making power over the food items included in group buying activities was due to their central role as an organizing figure within the self-organized group, facilitated by their relationships with grocery suppliers and neighborhood committees. Junyi was excluded from the group chat, indicating the power that *guanxi* can exert in decision-making within self-organized groups.

In conclusion, *guanxi* played a crucial role in self-organization and group buying activities during the COVID-19 lockdown period. The community group buying coordinators, as the central figures in self-organized groups, relied on their *guanxi* with grocery suppliers and the neighborhood committee to coordinate group buying activities, and they also acquired power in the process to gatekeep the purchased groceries and make money. The personal qualities of coordinators, as well as their *guanxi*, were significant factors that affected the prices and food items available in group buying activities.

4.4 Community Rebuilding during the Lockdown

The COVID-19 pandemic has drawn attention to the significance of community rebuilding, particularly in metropolitan areas such as Shanghai where social atomization and limited community involvement are common issues (Putnam, 2001; Simmel, 1950[1917]). This was reinforced by Danzai, a 24-year-old who was too preoccupied with work to engage in community affairs. Despite this, WeChat groups emerged as the community's central

communication and engagement platform during the pandemic. Danzai commented, "There was no WeChat group in the community before. Once when I was queuing for a COVID test in the neighborhood, a man asked me if I wanted to join our community's WeChat group to facilitate group buying." The importance of information exchange during disasters is critical, and ICTs can facilitate self-organization and information exchange (Houston et al., 2015; Li et al., 2019).

Moreover, the care for elderly residents is a significant aspect to consider in the community rebuilding process, given their vulnerability. The use of ICTs during the pandemic has highlighted the issue of "digital refugees" among elderly individuals who lack the self-efficacy to use ICTs during health crises (Liu et al., 2021). In Shanghai, for example, some elderly people did not know how to use WeChat to participate in community group buying. Liting, a 42-year-old, personally taught elderly residents upstairs how to use group solitaire to register their needs, demonstrating a proactive approach to rebuilding the community. In addition, Lydia, a 24-year-old group buying coordinator in her community, did not personally profit from organizing group buying but instead utilized the kickback to purchase additional food for elderly individuals who were unable to log their needs on WeChat.

Disasters provide communities with an exceptional opportunity to collectively access information and resources and to reconnect both online and offline (Houston et al., 2015; Li et al., 2019; Silver & Matthews, 2017). This serves as a valuable means for individuals to obtain the necessary information and resources through their communities. In this way, the community, which was previously lacking in a metropolitan area, was rebuilt, and new social relations were established.

5. Discussion

This study examined the self-organization behaviors of community group buying during the Shanghai lockdown from March to June 2022. The study was conducted through interviews and a four-month ethnography, and analyzed the patterns of community group buying, the use of information and communication technologies (ICTs), and the role of social relations in the self-organization process.

The study findings revealed that during the Shanghai lockdown, community group buying exhibited a self-organization pattern in which group buying coordinators played a crucial role in finding and screening resources, connecting suppliers, and exchanging information. Volunteers assisted the coordinators by delivering groceries to the doorstep of every household to satisfy the residents' needs when outdoor activities were prohibited during the lockdown. Compared with the groceries purchase pattern before the lockdown, the residents were behaving in a more collective way in which they need to collaborate with others in the neighborhood to get life necessities. In this process, the residents were sharing common private interests, communicating messages, and coordinating individual activities, which were exactly the merits of collective action (Flanagin et al., 2006).

The study also revealed that WeChat groups played a significant role as a resource and information integrator, where residents shared related information and organized group buying activities. Throughout the process, various group chats emerged, and multiple functions of WeChat were integrated, including payment, instant messaging, and mini-programs. Some features were applied to satisfy people's needs beyond the designed features of WeChat, such as group solitaire, which was originally a game tool in the WeChat group.

Moreover, the study answered the research question about the social relations' role in the interaction between self-organization and information technology use during the lockdown.

Despite the usage of information technology with a vision of efficiency-improving and empowerment, the organizing principles within the use of ICTs remained the reproduction of traditional social relations paradoxically. *Guanxi*, as the social relations in the social structure, played a central role in fulfilling the organization, and gave the group buying coordinators power to earn kickbacks, exclude someone from the group, and lead the decision-making process on what to purchase. Some positive social relations also emerged in the utilization of ICTs for the residents to organize themselves, such as the rebuilding of the community and the care for the elderly in the rebuilding.

The findings from this study could be explained with the adaptive structuration theory (AST) proposed by DeSanctis and Poole (1994). According to AST, the interplay among social structures, human interaction, and information technology is a triangle in which the three elements influenced one another (DeSanctis & Poole, 1994). The technology use depends on the environment and other sources of social structures, which should include the social relations existing in the society. In this case, the coordinators' personal social relationships endowed them with power in the group decision process. Vice versa, the application of information technologies also resulted in the emergence of new sources of structures, such as the new usage way of group solitaire beyond the intention of information technology designers in the WeChat group, and the community rebuilding during the lockdown.

Before the pandemic, community group buying was explored by e-commerce companies like Alibaba and Meituan to display grocery products in rural areas (SQLI Digital Experience, 2022; Yuan et al., 2022; Zheng, 2021). The tech giants in China stepped into the field of community group buying under the rural revitalization strategy to make people in remote areas acquire the same products as people in urban areas did (SQLI Digital Experience, 2022). WeChat

groups and mini-programs provided necessary conditions for rural residents to participate in community group buying (SQLI Digital Experience, 2022; Yuan et al., 2022). A purchasing method originally designed for rural areas in China experienced explosive growth and became the lifeline in the large city of Shanghai during the lockdown period, which is worth reflecting upon. The city lockdown, as an unusual event in modern society, provided a soil for the revival of traditional relationships in a metropolis. This shattered our assumption of the binary opposition between rural China and modern society (Fei, 1992), and demonstrated that traditional connections still exist in modern society, waiting for an opportunity to re-emerge and affect people's interactions, social organizational structures, and the use of modern information technology. The city lockdown provided a unique opportunity for these traditional relationships to resurface and influence the interactions of city dwellers. For the technology use in the self-organization during the lockdown, this study illustrated the Chinese traditional social relations as a factor in the social structure influence the technology use and human interactions afforded by the technology, which added the perspective of Eastern cultures to the adaptive structuration theory.

This study has two limitations. The first limitation of this study is that all interviews were conducted during the lockdown period, and the author was unable to communicate with the participants face-to-face. Instead, the author had to conduct the interviews over the phone, which resulted in the loss of a significant amount of non-verbal information. The second limitation is the political power of self-organization in community group buying as a collective action was not fully explored. During the interviews, none of the interviewees mentioned the possibility of political activism, though the collective action should be an embedded force in social movements against social inequalities (Millward & Takhar, 2019). However, the social activism in Shanghai

five months after the end of Shanghai lockdown to protest against the zero-COVID policy in China called the author's attention (Davidson & Yu, 2022). After thousands of residents in Shanghai and other major cities in China took to streets to protest against the zero-COVID policy (Davidson & Yu, 2022), the government announced the end of the dynamic zero-COVID policy in December 2022 (Ergenc, 2023). It is worth exploring the possibility that the strict lockdown primed social dissatisfaction against the zero-COVID policy and that self-organization in community group buying formed the basis of organization in social movements. Further studies are required to answer these questions.

Despite these limitations, this study continued the previous studies on people using information technology for self-organization in disasters (e.g., Albris, 2018; Houston et al., 2015; Kaufhold & Reuter, 2016; Li et al., 2019; Murthy & Longwell, 2013; Silver & Matthews, 2017; Stephens et al., 2021). It described the self-organization patterns and ICTs use in community group buying during the Shanghai lockdown. The study compares the collective pattern of purchasing groceries with the individualistic pattern in the platform economy, rebutting Turkle's (2011) argument that technology would drive people apart. In urgent moments like the Shanghai lockdown, ICTs can bring people together to react to disasters. This study enriches the academic tradition of research on citizen involvement in disasters with ICTs by adding the perspective of social relations. The intersection of technology use and social structures is essential to our understanding of self-organization in disasters.

References

Albris, K. (2018). The switchboard mechanism: How social media connected citizens during the 2013 floods in Dresden. *Journal of Contingencies and Crisis Management*, *26*(3), 350–357. doi:10.1111/1468-5973.12201

Allen-Ebrahmian, B. (2022, April 12). Shanghai lockdown: A modern city starves. *Axios*. https://www.axios.com/2022/04/12/shanghai-china-covid-lockdowns

Bai, W., Sha, S., Cheung, T., Su, Z., Jackson, T., & Xiang, Y.-T. (2022). Optimizing the dynamic zero-COVID policy in China. *International Journal of Biological Sciences*, *18*(14), 5314–5316. doi:10.7150/ijbs.75699

Bian, Y. J. (2006). Guanxi. In J. Beckert & M. Zafirovski (Eds.), *International encyclopedia of economic sociology* (pp. 312–314). Routledge.

Castells, M., Fernandez-Ardevol, M., Qiu, J. L., & Sey, A. (2009). *Mobile communication and society: A global perspective*. The MIT Press.

Catterall, P. (2022, April 14). Community group buying in pandemic-stricken Shanghai. *Pandaily*. https://pandaily.com/community-group-buying-in-pandemic-stricken-shanghai/

Chan, A. S. (2013). *Networking peripheries: Technological futures and the myth of digital universalism*. The MIT Press.

Chan, L. S. (2018). Liberating or disciplining? A technofeminist analysis of the use of dating apps among women in urban China. *Communication Culture & Critique*, *11*(2), 298–314. doi:10.1093/ccc/tcy004

Chung, K. S. K., & Hossain, L. (2010). Towards a social network model for understanding information and communication technology use for general practitioners in rural Australia. *Computers in Human Behavior*, *26*(4), 562–571. doi:10.1016/j.chb.2009.12.008

CNNIC. (2019). *The 44th statistical report on Internet development in China*. China Internet Network Information Center. https://www.cnnic.com.cn/IDR/ReportDownloads/201911/P020191112539794960687.pdf

Croucher, S. M., & Cronn-Mills, D. (2015). *Understanding communication research methods: A theoretical and practical approach*. Routledge.

Davidson, H., & Yu, V. (2022, November 27). Clashes in Shanghai as protests over zero-Covid policy grip China. *The Guardian.* https://www.theguardian.com/world/2022/nov/28/clashes-in-shanghai-as-protests-over-zero-covid-policy-grip-china

DeSanctis, G., & Poole, M. S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization Science*, *5*(2), 121–147. doi:10.1287/orsc.5.2.121

Ergenc, C. (2023, January 28). China suddenly abandoned its zero COVID policy. How did it start in the first place? *The Diploma.* https://thediplomat.com/2023/01/china-suddenly-abandoned-its-zero-covid-policy-how-did-it-start-in-the-first-place/

Fei, X. (1992). *From the soil: The foundations of Chinese society*. (G. G. Hamilton & W. Zheng, Trans). University of California Press. (Original work published 1947).

Flanagin, A. J., Stohl, C., & Bimber, B. (2006). Modeling the structure of collective action. *Communication Monographs, 73*(1), 29–54. doi:10.1080/03637750600557099

Florian, B., & Lüthje, B. (2017). 'Made in China 2025': Intelligent manufacturing and work. In A. Marks, K. Briken, S. Chillas, & M. Krzywdzinski (Eds.), *The new digital workplace: How new technologies revolutionise work* (pp. 42–62). Bloomsbury Publishing.

Fulk, J., Schmitz, J., & Steinfield, C. (1990). A social influence model of technology use. In J. Fulk & C. Steinfield (Eds.), *Organizations and communication technology* (pp. 117–140). Sage Publications.

Gan, N., Deng, S., & CNN Beijing Bureau (2022, September 5). Chinese cities rush to lockdown in show of loyalty to Xi's 'zero-Covid' strategy. *CNN.* https://www.cnn.com/2022/09/05/china/china-covid-lockdown-74-cities-intl-hnk/index.html

Gans, H. J. (1961). Planning and social life: Friendship and neighbor relations in suburban communities. *Journal of the American Institute of Planners*, *27*(2), 134–140. doi:10.1080/01944366108978443

Gibson, J. J. (1979). *The ecological approach to visual perception*. Houghton, Mifflin and Company.

Glowacz, F., & Schmits, E. (2020). Psychological distress during the COVID-19 lockdown: The young adults most at risk. *Psychiatry Research*, *293*, 113486. doi:10.1016/j.psychres.2020.113486

Goh, B., & Woo, R. (2022, May 30). COVID-hit Shanghai to end two-month lockdown on June 1. *Reuters.* https://www.reuters.com/world/china/some-beijing-back-work-shanghai-inches-closer-ending-covid-lockdown-2022-05-30/

Horwitz, J. (2022, April 8). Shanghai jumps into group buying to stay fed during COVID lockdown. *Reuters.* https://www.reuters.com/world/china/shanghai-jumps-into-group-buying-stay-fed-during-covid-lockdown-2022-04-08/

Houston, J. B., Hawthorne, J., Perreault, M. F., Park, E. H., Goldstein Hode, M., Halliwell, M. R., Turner McGowen, S. E., Davis, R., Vaid, S., & McElderry, J. A. (2015). Social media and

disasters: a functional framework for social media use in disaster planning, response, and research. *Disasters*, *39*(1), 1–22. doi:10.1111/disa.12092

Huang, T. (2022, April 15). "Zero-COVID" in Shanghai comes at high social and economic cost. *Personal Institute For International Economics.* https://www.piie.com/blogs/realtime-economic-issues-watch/zero-covid-shanghai-comes-high-social-and-economic-costs

Huang, Y.-H. (2000). The personal influence model and *Gao Guanxi* in Taiwan Chinese public relations. *Public Relations Review*, *26*(2), 219–236. doi:10.1016/S0363-8111(00)00042-4

Ip, G. (2022, February 16). China's 'zero-Covid' policy holds lessons for other nations. The Wall Street Journal. https://www.wsj.com/articles/chinas-zero-covid-policy-holds-lessons-for-other-nations-11645033130

Kaufhold, M.-A., & Reuter, C. (2016). The self-organization of digital volunteers across social media: The case of the 2013 European floods in Germany. *Journal of Homeland Security and Emergency Management*, *13*(1), 137–166. doi:10.1515/jhsem-2015-0063

Kenney, M., & Zysman, J. (2016). The rise of the platform economy. *Issues in Science and Technology*, *32*(3), 61–69. https://www.jstor.org/stable/24727063

Lau, H., Khosrawipour, V., Kocbach, P., Mikolajczyk, A., Schubert, J., Bania, J., & Khosrawipour, T. (2020). The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China. *Journal of Travel Medicine, 27*(3), 1–7. doi:10.1093/jtm/taaa037

Lei, Y.-W. (2021). Delivering solidarity: Platform architecture and collective contention in China's platform economy. *American Sociological Review*, *86*(2), 279–309. doi:10.1177/0003122420979980

Li, J., Stephens, K. K., Zhu, Y., & Murthy, D. (2019). Using social media to call for help in Hurricane Harvey: Bonding emotion, culture, and community relationships. *International Journal of Disaster Risk Reduction*, *38*, 101212. doi:10.1016/j.ijdrr.2019.101212

Li, L., Bensi, M., Cui, Q., Baecher, G. B., & Huang, Y. (2021). Social media crowdsourcing for rapid damage assessment following a sudden-onset natural hazard event. *International Journal of Information Management*, *60*, 102378. doi:10.1016/j.ijinfomgt.2021.102378

Li, L., Ma, Z., & Cao, T. (2021). Data-driven investigations of using social media to aid evacuations amid Western United States wildfire season. *Fire Safety Journal*, *126*, 103480. doi:10.1016/j.firesaf.2021.103480

Lin, N. (2001). Guanxi: A conceptual analysis. In A. Y. So, N. Lin, & D. Poston (Eds.), *Chinese triangle of Mainland China, Taiwan, and Hong Kong: Comparative institutional analyses* (pp. 153–166). Greenwood Press.

Liu, L., Wu, F., Tong, H., Hao, C., & Xie, T. (2021). The digital divide and active aging in China. *International Journal of Environmental Research and Public Health, 18*(23), 12675. doi:10.3390/ijerph182312675

Lovett, S., Simmons, L. C., & Kali, R. (1999). Guanxi versus the market: Ethics and efficiency. *Journal of International Business Studies*, *30*, 231–247. doi:10.1057/palgrave.jibs.8490068

Lu, S., & Khan, N. (2022, April 16). Shanghai lockdown knocks out E-Commerce, leaving group buying and bartering. *The Wall Street Journal.* https://www.wsj.com/articles/shanghais-lockdown-knocks-out-e-commerce-leaving-group-buying-and-bartering-11650101402

Millward, P., & Takhar, S. (2019). Social movements, collective action and activism. *Sociology, 53*(3), NP1–NP12. doi:10.1177/003803851881728

Montag, C., Becker, B., & Gan, C. (2018). The multipurpose application WeChat: a review on recent research. *Frontiers in Psychology*, *9*, 2247. doi:10.3389/fpsyg.2018.02247

Murthy, D., & Longwell, S. A. (2013). Twitter and disasters: The uses of Twitter during the 2010 Pakistan floods. *Information, Communication & Society*, *16*(6), 837–855. doi:10.1080/1369118X.2012.696123

SQLI Digital Experience. (2022, June 7). Online community buying opens up rural areas for Chinese big tech. *SQLI Digital Experience.* https://www.sqli.com/int-en/insights-news/blog/online-community-buying-opens-rural-areas-chinese-big-tech

Patton, M. (1990). *Qualitative evaluation and research methods* (2nd ed.). Sage Publications.

Peterson, T. R., Witte, K., Enkerlin-Hoeflich, E., Espericueta, L., Flora, J. T., Florey, N., Loughran, T., & Stuart, R. (1994). Using informant directed interviews to discover risk orientation: How formative evaluations based in interpretive analysis can improve persuasive safety campaigns. *Journal of Applied Communication Research*, *22*(3), 199–215. doi:10.1080/00909889409365398

Putnam, R. D. (2001). *Bowling alone: The collapse and revival of American community*. Simon & Schuster.

Qiu, J. L. (2009). *Working-class network society: Communication technology and the information have-less in urban China*. The MIT Press.

Russell, J. (2017, January 9). China's Tencent takes on the APP Store with launch of 'mini programs' for WeChat. *TechCrunch+*. https://techcrunch.com/2017/01/09/wechat-mini-programs/

Silver, A., & Matthews, L. (2017). The use of Facebook for information seeking, decision support, and self-organization following a significant disaster. *Information, Communication & Society*, *20*(11), 1680–1697. doi:10.1080/1369118X.2016.1253762

Simmel, G. (1950[1917]). Individual and society in eighteenth- and nineteenth-century views of life. In K. H. Wolff (Ed.), *The sociology of Georg Simmel* (pp. 58–84). Ohio State University Press.

Simsa, R., Rameder, P., Aghamanoukjan, A., & Totter, M. (2019). Spontaneous volunteering in social crises: Self-organization and coordination. *Nonprofit and Voluntary Sector Quarterly*, *48*(2S), 103S-122S. doi:10.1177/089976401878547

Small, M. L. (2009). 'How many cases do I need?' On science and the logic of case selection in field-based research. *Ethnography*, *10*(1), 5–38. doi:10.1177/1466138108099586

Stephens, K., Tich, K., & Quist, L. M. (2021). The official emergency responders had infrastructure: We had iphones. In C. J. Liberman & K. B. Wright (Eds.), *Casing mediated communication* (pp. 1–14). Kendall Hunt.

Sun, P. (2019). Your order, their labor: An exploration of algorithms and laboring on food delivery platforms in China. *Chinese Journal of Communication*, *12*(3), 308–323. doi:10.1080/17544750.2019.1583676

Talen, E. (1999). Sense of community and neighbourhood form: An assessment of the social doctrine of new urbanism. *Urban Studies*, *36*(8), 1361–1379. doi:10.1080/0042098993033

Tencent. (2022). *Tencent announces 2022 first quarter results.* Tencent. https://static.www.tencent.com/uploads/2022/05/18/f403326038a641b20465a17eff3567ce.pdf

Turkle, S. (2011). *Along together: Why we expect more from technology and less from each other.* Basic Books.

UN Woman. (2020). *Whose time to care: Unpaid care and domestic work during COVID-19*. United States Woman. https://data.unwomen.org/publications/whose-time-care-unpaid-care-and-domestic-work-during-covid-19

Wallis, C. (2011). Mobile phones without guarantees: the promises of technology and the contingencies of culture. *New Media & Society*, *13*(3), 471–485. doi:10.1177/1461444810393904

Wallis, C. (2015). Micro-entrepreneurship, new media technologies, and the reproduction and reconfiguration of gender in rural China. *Chinese Journal of Communication*, *8*(1), 42–48. doi:10.1080/17544750.2014.988633

Wang, W. (2018). The differentially associated sharing economy. *New Media & Society*, *20*(11), 4237–4254. doi:10.1177/1461444818769572

Warren, C. A. B., & Karner, T. X. (2005). *Discovering qualitative methods: Field research, interviews and analysis.* Roxbury Publishing.

Whittaker, J., McLennan, B., & Handmer, J. (2015). A review of informal volunteerism in emergencies and disasters: Definition, opportunities and challenges. *International Journal of Disaster Risk Reduction*, *13*, 358–368. doi:10.1016/j.ijdrr.2015.07.010

Yang, G. (2022). *The Wuhan lockdown*. Columbia University Press.

Yuan, R., Qian, T., Du, Z., & Cao, B. (2022, April 1). The shake-out of China's community group-buying market. *Caixin Global*. https://www.sixthtone.com/news/1010034/the-shake-out-of-chinas-community-group-buying-market

Zhang, L., & Chen, J. Y. (2022). A regional and historical approach to platform capitalism: The cases of Alibaba and Tencent. *Media, Culture & Society*, *44*(8), 1454–1472. doi:10.1177/01634437221127796

Zhang, Z., & Zhang, M. (2013). Guanxi, communication, power, and conflict in industrial buyer-seller relationships: Mitigations against the cultural background of harmony in China. *Journal of Business-to-Business Marketing*, *20*(2), 99–117. doi:10.1080/1051712X.2013.775625

Zheng, Y. (2021). Analysis of community group buying market model and exploration of development strategy. *Rural Economy and Science and Technology*, *32*(12), 95–97.

Appendix 1. Participants' Details

Pseudonym	Gender	Occupation	Age	Family Condition	Date of Interview	How long has he/she lived in Shanghai?
Junyi	Female	Unemployed	24	In a relationship	04/20/2022	6ys
Anna	Female	Housewife	49	Married with children	04/23/2022	19ys
Yilin	Female	Business Compliance Officer	23	Single	04/23/2022	5ys
Yanjie	Female	Housewife	44	Married with children	04/23/2022	44ys(native)
Bingqing	Female	Freelancer	24	In a relationship	04/24/2022	3ms

Li	Male	Administrator	30	Married with children	04/27/2022	30ys(native)
Danzai	Female	HR	24	Single	04/28/2022	20ys
Gaven	Female	Student	25	In a relationship	04/29/2022	25ys(native)
Liting	Female	Self-employed business owner	42	Married with children	04/29/2022	20ys
Lydia	Female	Stock trader	24	Single	05/02/2022	24ys(native)
Vinci	Male	Foreign enterprise staff	45	Married with children	05/07/2022	45ys(native)
Pang	Male	Consultant	25	Single	05/10/2022	6ys
Wu	Male	Teacher	35	Married with children	05/12/2022	17ys